

PATENT COOPERATION TREATY

PCT

10/585 669

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference FNTYA088WO	FOR FURTHER ACTION	See item 4 below
International application No. PCT/JP2005/014148	International filing date (<i>day/month/year</i>) 27 July 2005 (27.07.2005)	Priority date (<i>day/month/year</i>) 25 August 2004 (25.08.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant TOYOTA JIDOSHA KABUSHIKI KAISHA		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).
 2. This REPORT consists of a total of 8 sheets, including this cover sheet.
- In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input checked="" type="checkbox"/> Box No. VIII	Certain observations on the international application
4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Date of issuance of this report 28 February 2007 (28.02.2007) Authorized officer <p style="text-align: center;">Yoshiko Kuwahara</p> e-mail: pt07.pct@wipo.int
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY



To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2005/014148

International filing date (day/month/year)
27.07.2005

Priority date (day/month/year)
25.08.2004

International Patent Classification (IPC) or both national classification and IPC
B60L11/18, B60K6/04

Applicant
TOYOTA JIDOSHA KABUSHIKI KAISHA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/014148

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2005/014148

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	1-14
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V.

1. Reference is made to the following documents:

- D1 : CA 2 253 691 A1 (DUBOIS, JEAN-MARIE) 9 June 1999 (1999-06-09)
D2 : EP 0 916 546 A (TOYOTA JIDOSHA KABUSHIKI KAISHA) 19 May 1999
(1999-05-19)
D3 : PATENT ABSTRACTS OF JAPAN vol. 2003, no. 08, 6 August 2003
(2003-08-06) & JP 2003 112539 A (NISSAN MOTOR CO LTD), 15 April 2003
(2003-04-15)
D4 : TERATANI T ET AL: "Development of Toyota mild hybrid system (THS-M) with
42V powernet" ELECTRIC MACHINES AND DRIVES CONFERENCE, 2003.
IEMDC'03. IEEE INTERNATIONAL JUNE 1-4, 2003, PISCATAWAY, NJ,
USA, IEEE, vol. 1, 1 June 2003 (2003-06-01), pages 3-10, XP010644397 ISBN:
0-7803-7817-2

2. Novelty and Inventive Step Art. 33(1), (2) and (3) PCT

- 2.1 Document D1, which is considered to represent the most relevant state of the art,
discloses (the references in parentheses applying to this document):

An electric vehicle that is driven with output power of a motor (page 6, line 8, "traction motor"), said vehicle comprising:

- an accumulator unit that transmits electric power to and from the motor (page 5, line 26, "main batteries"),
- an auxiliary machine that is actuated with a supply of electric power from the accumulator unit (page 6, line 21, "auxiliary electrical motor"),
- a steering assist structure that is driven with a supply of electric power from the accumulator unit (page 6, line 18, "power steering pump") and outputs a steering torque to a steering mechanism, and
- a control module (page 8, line 24 to page 9, line 4) that stops supplies of electric power from the accumulator unit to the motor.

From this, the subject-matter of independent claim 1 differs in that:

- a voltage measurement module is provided that measures a voltage of the accumulator unit, and
- the control unit is reactive on a preset first voltage level and stops supplies of electric power from the accumulator unit to the auxiliary machine and to the motor when the voltage is below the preset first level.

2.1 The subject-matter of claim 1 is therefore novel (Art. 33(2) PCT)

The problem to be solved by the present invention may be regarded as increasing the steering security of an electrically driven vehicle.

2.2 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Art. 33(3) PCT) for the following reasons:

None of the cited documents provides a solution in the direction of the invention, i.e. keeping up the power supply to the steering assist structure when the voltage level of the accumulator unit falls below a preset first level.

Instead the prior art teaches to start an engine provided on the electrically driven vehicle in order to recharge the accumulator unit.

2.3 Claims 2-10 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

2.4 Independent method claim 11 claims a method merely consisting of steps of the purposive use of the device claimed in apparatus claim 1. The above said with respect to the subject matter of claim 1 therefore applies mutatis mutandis to the subject matter of claim 11. Consequently, the subject matter of claim 11 complies with the provisions of Art. 33(1) PCT since it is new (Art. 33(2) PCT) and involves an inventive step (Art. 33(3) PCT).

- 2.5 Claims 12-14 are dependent on claim 11 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VIII.

1. Clarity Art. 6 PCT

- 1.1 The application does not meet the requirements of Article 6 PCT, because claims 1 and 11 are not clear.
- 1.2 The subject matter of claims 1 and 11 is directed to an electric vehicle and to a respective control method. According to the description the invention is directed to ensure stable steering performance.

However, the independent claims are silent about the control of the steering assist structure which is respectively claimed. Therefore, it is not defined whether the steering assist structure is still supplied with electric power in case of the voltage of the accumulator unit falls below the preset first level. Hence, the subject matter of claims 1 and 11 is not defined.

- 1.3 Consequently, the subject matter of claims 1 and 11 does not fulfill the requirements of Art. 6 PCT with respect to clarity.
- 1.4 Some of the features in the apparatus claim 1 relate to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.
- 1.5 The vague and imprecise statement in the description on pages 24 and 25, bridging paragraph, implies that the subject-matter for which protection is sought may be

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

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different to that defined by the claims, thereby resulting in lack of clarity in the sense of Art. 6 PCT when used to interpret them.